

REMARKS

This Amendment, submitted in reply to the Office Action dated June 28, 2005, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

As an initial matter, Applicant requests that the finality of the Office Action be withdrawn. The Examiner's rejection over a new reference, Brzakovic, could have been previously made. Rejection on a final basis over new prior art in this situation is unfairly prejudicial to Applicant. Therefore, the finality is premature.

As a preliminary matter, claims 12-14 are objected to under 37 C.F.R. § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. Applicant hereinabove amends the claims to obviate the objection.

Turning to the merits of the Office Action, claims 1-16 are all the claims pending in the application. Claims 1, 2, 3, 6 and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Clarke (U.S.P. 5,799,100). Claims 1, 3, 15, 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by Brzakovic (IEEE, Vol. 9, No.3, September 1990). Claims 5, 8 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Clarke in view of Abdel-Mottaleb (U.S.P. 5,768,333). Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Brzakovic in view of Nakajima (U.S.P. 5,784,482). Claims 13 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brzakovic in view of Smith (U.S.P. 6, 631, 204).

Claims 4, 7 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Descriptions of the present invention and art previously of record are set forth in the March 8, 2005 Amendment at page 10. Applicant would refer the Examiner to these descriptions.

Turning to the newly cited art, Brzakovic relates to an approach for detection and classification of tumors. The analysis is performed in two stages. First, the system identifies an area that may correspond to tumors. Next, the identified area is further analyzed to be classified as either benign or malignant. See Abstract.

Nakajima relates to a method of tumor pattern detection in an image representing a radiation image of an object with an iris filter operation method.

Smith relates to a similarity measurement method for the classification of medical images into predetermined categories.

With regard to the anticipation rejection of claim 1, the Examiner maintains that Clarke discloses each limitation and states that “inherent with outputting regions of interest and determining whether a shadow is malignant or benign is providing some means to alert the user through the display system what kind of mass has been discovered.” Applicant would submit that outputting information so that malignancy or benignancy as judged by a malignancy judging means is not inherent contrary to the Examiner’s contention. Useful information to help a user determine the status of tissue can be provided while falling short of providing the information to distinguish malignancy and benignancy as claimed.

The computer monitor display in Clarke is explicitly illustrated in figs. 1 and 10. According to fig. 1, the computer monitor display includes the raw image, the directional feature enhanced image and the detected segmented mass. Fig. 10 is a front perspective view of an

exemplary medical workstation showing an array of monitors to allow visual inspection of the raw, enhanced and segmented images. An insert in the segmented image provides the benign/malignant classification probability. Col. 6, lines 25-27. Applicant notes that a display of probability index does not disclose that a result as “malignant” and a result as “benignant” are output in such a manner that whether the prospective abnormal shadow is malignant or benignant as judged by the malignancy judging means can be distinguished. Therefore, claim 1 is not anticipated by Clarke.

With regard to the anticipation rejection of claims 2-3 under Clarke, Applicant submits that claims 2-3 are allowable, at least because of their dependence from claim 1.

With further regard to the anticipation rejection of claim 3, the Examiner maintains that Clarke discloses each limitation of this claim. Applicant disagrees. Claim 3 recites comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value. Clarke discloses mass detection, which is the differentiation of mass and normal tissue, and mass classification, which is the differentiation of benign and malignant tissues. In Clarke, the system first determines whether the tissue is a normal tissue or a mass. Once the tissue is determined as a mass, the system will further determine whether the mass is benign or malignant. Col. 15, line 30 to col. 16, line 29. In other words, the system in Clarke compares normalcy characters with the characters of a mass to perform mass detection, and then, if needed, compares benign characters and malignant characters to perform mass classification. Clarke does not disclose comparing the normalcy characters with the benignancy characters or comparing the normalcy characters with the malignancy characters. As a result, Clarke fails to disclose comparing the

normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value, as recited in claim 3. Therefore, claim 3 is not anticipated by Clarke for this addition reason.

With regard to the anticipation rejection of claims 6 and 9 under Clarke, Applicant submits that these claims are not anticipated by Clarke for reasons analogous to these for claims 1 and 3.

With regard to the anticipation rejection of claim 1 under Brzakovic, the Examiner maintains that Brzakovic discloses each limitation and cites section IV and fig. 9 to teach that the prospective abnormal shadow information output means outputs the information on the prospective abnormal shadow in such a manner that whether the prospective abnormal shadow is malignant or benignant as judged by the malignancy judging means can be distinguished. Applicant disagrees.

Section IV describes the benign/malignant tumor classification. Fig. 9 provides examples of classified tumors images. However, fig. 9 merely discloses that images of classified tumors are displayed. It does not teach that a result as “malignant” and a result as “benignant” are output in such a manner that whether the prospective abnormal shadow is malignant or benignant as judged by the malignancy judging means can be distinguished. It is ambiguous whether the text, such as “this shape is malign tumor”, is a label for the images in the figure or it is an output after the classification stage. In addition, Brzakovic suggests that the classification is not very successful. Page 241, first paragraph. Brzakovic further states that the system is a useful tool in aiding a human expert when analyzing mammograms. For these reasons, Brzakovic does not necessarily or inherently teach the prospective abnormal shadow information output means

outputs the information on the prospective abnormal shadow in such a manner that whether the prospective abnormal shadow is malignant or benignant as judged by the malignancy judging means can be distinguished, as recited in claim 1. Therefore, claim 1 is not anticipated by Brzakovic.

With regard to the anticipation rejection of claims 3, 15, 16 under Brzakovic, Applicant submits that these claims are allowable, at least because of their dependence from claim 1.

With further regard to the anticipation rejection of claim 3 under Brzakovic, the Examiner cites the measurements and classification as teaching of comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value. The deficiencies of Brzakovic are analogous to these of Clarke in that Brzakovic only discloses classifying the tissues either into tumors vs. non-tumors or into benign as malignant. See fig. 3. No aspect of Brzakovic discloses comparing the normalcy characters with the benignancy characters or comparing the normalcy characters with the malignancy characters. Whereas, claim 3 recites comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value. Thus, claim 3 is not anticipated by Brzakovic for this additional reason.

With regard to the obviousness rejection of claims 5, 8 and 11 over Clarke in view of Abdel-Mottaleb, Applicant submits that these claims are allowable, at least because of their dependence from claims 3, 6 and 9, respectively, and because Abdel-Mottaleb fails to make up for the deficiencies of Clarke.

With regard to the obviousness rejection of claim 12 over Brzakovic in view of Nakajima, Applicant submits that claim 12 is allowable, at least because of its dependence from claim 3, and because Nakajima fails to make up for the deficiencies of Brzakovic submitted above for claim 3. In addition, neither Brzakovic nor Nakajima discloses feature values comprising an output value of a morphology filter. Thus, this obviousness rejection of claim 12 should be withdrawn for this additional reason.

With regard to the obviousness rejection of claims 13 and 14 over Brzakovic in view of Smith, Applicant submits that claims 13 and 14 are allowable, at least because of their dependence from claim 3, and because Smith fails to make up for the deficiencies of Brzakovic.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


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